

R.M.U. USE ONLY
PROBLEM STATEMENT NO:
DATE OF RECEIPT:



STAGE I RESEARCH PROBLEM STATEMENT

- I. PROBLEM TITLE (required):** Research the feasibility of Utilizing Recycled Asphalt Pavement (RAP) in Portland Cement Concrete Pavement (PCCP).
- II. PROBLEM STATEMENT (required):** On many sections of Montana's Interstate and NHS system the plant mix pavement is at or near 12 to 14 inches thick. Finding a cost effective use for the millings generated when these existing surfaces are removed is a controlling factor in rehabilitation options considered for these sections. This research would help provide another option for dealing with thick plant mix sections while conserving natural resources and energy. In order to use Recycled Asphalt Pavement (RAP) in the concrete used for Portland Cement Concrete Pavement (PCCP) an extensive literature review and lab testing should be performed. If the testing and existing research shows promise a test section on an MDT project or Accelerated Load Facility would be constructed and evaluated.

This requires MDT staff to continue to change the way of viewing and thinking of our roadways. Meaning we need to think of our roadways as a material source that could be used to reconstruct our roadways rather than as a waste product. With the recent cost increases for asphalt cement it is imperative that MDT develop other options for dealing with RAP and this has unlimited potential.

An example of the proposed process: On an interstate route, the in-place plant mix pavement could be removed by milling, (if needed the base gravel would be reworked, blended with RAP and re-compacted using some percentage of the RAP for additional support.) use a portion of the RAP in PCCP using a central batch plant, then produce shoulder material by cold recycle RAP in a pug mill, followed by a chip seal on the shoulders. The net result would be that a surfacing section with a 30 year design life (or longer) could be constructed without using a hot plant, thus saving burner fuel, and asphalt binder, along with saving or reducing the amount of virgin materials used in the project, and conserving natural resources.

RESEARCH PROPOSED (required):

1. Literature review and data research
2. Lab research
3. Field test and slab on an accelerated load facility (ALF) or field demonstration project.

III. IT COMPONENT (required): Identify if the project includes an IT component (purchasing of IT hardware, development of databases, acquisition of existing applications, etc) or not. If so, describe IT component in as much detail as possible.

N/A This research does not require purchasing IT hardware or software.

IV. **URGENCY AND EXPECTED BENEFITS (required):** The sooner research can begin, the better. The research will take time and full implementation will require satisfactory performance in a test section or Accelerated Load Facility (ALF) . Both of which take several years. The expected benefits are two fold: First MDT will start saving natural resources, take advantage of cheaper building material (RAP and cement) and maybe the fuel saving will be passed on to MDT. Second MDT should see a long term benefit with a reduced life cycle cost for concrete pavement over plant mix surfacing.

V. **IMPLEMENTATION PLAN (required):** After research and development is complete, very little additional work would be need to implement the construction practice. Implementation would be through our road project development process.

VI. **SUBMITTED BY: (required)**

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VII. **CHAMPION: (Must be internal to MDT)**

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VIII. **SPONSOR(S): (Internal to MDT, Division Administrator or higher)**

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Note: Submitter may attach continuation sheets if necessary.